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PTO/SB/21 (08-03)

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**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Application Number	10/694,418
Filing Date	October 27, 2003
First Named Inventor	Kandimalla et al.
Art Unit	NA
Examiner Name	NA
Attorney Docket Number	HYB-005US3

Total Number of Pages in This Submission

5

ENCLOSURES (Check all that apply)

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Wayne A. Keown, Ph.D. (Reg. No. 33,923)
Signature	<i>W. A. Keown</i>
Date	2/5/04

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: **Kandimalla et al.**

Serial No.: **10/694,418**

Filed: **October 27, 2003**

Entitled: **Modulation of Immunostimulatory Activity of
Immunostimulatory Oligonucleotide Analogs by Positional
Chemical Changes**

Examiner: **NA**

Group Art Unit: **NA**

Attorney Docket No.: **HYB-005US3 (1006/006)**

Commissioner for Patents
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INFORMATION DISCLOSURE STATEMENT

Sir:

Applicants and their attorney are aware of the following publications and information listed on the attached PTO Form 1449, and in accordance with 37 C.F.R. §1.97 hereby submit these publications for the Examiner's consideration.

Applicants state that the current application is a Divisional application claiming priority to U.S. Patent Application Serial No. 09/965,116, filed September 26, 2001. Applicants also state that the references listed on the attached PTO Form 1449 were previously cited in the parent case and therefore copies of the references are not enclosed herewith.

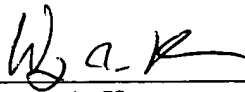
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under United States law, Applicants reserve the right to present to the Office relevant facts and law regarding the appropriate status of such documents.

This Information Disclosure Statement is being filed before the mailing date of a first Office Action on the merits and is therefore submitted as both timely and proper. Therefore, no fees are believed to be due.

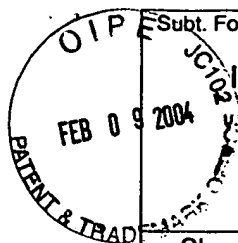
Respectfully submitted,

Date: 2/5/04



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Subt. Form PTO-1449

INFORMATION DISCLOSURE
IN AN APPLICATION

(Use several sheets if necessary)

Sheet 1 OF 2

Docket Number

HYB-005US3

Application Number

10/694,418

Applicant

Kandimalla

Filing Date

October 27, 2003

Group Art Unit

NA

U.S. Patent Documents

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,149,798	09/22/92	Agrawal et al.	536	27	

Foreign Patent Documents

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	WO99/62923		PCT				

Other Documents (Including Author, Title, Date Pertinent Pages, Etc.)

C1.	Khorana et al. (1972) "Studies on Polynucleotides," <i>J. Molec. Biol.</i> 72:209
C2.	Reese (1978) "The Chemical Synthesis of Oligo- and Poly-Nucleotides By The Phosphorotriester Approach," <i>Tetrahedron</i> 34:3143-3179
C3.	Beaucage et al. (1981) "Deoxynucleoside Phosphoramidites - A New Class of Key Intermediates for Deoxypolynucleotide Synthesis," <i>Tetrahedron Lett.</i> 22:1859-1862
C4.	Connolly et al. (1984) "Synthesis and Characterization of an Octanucleotide Containing the EcoRI Recognition Sequence With A Phosphorothioate Group At The Cleavage Site," <i>Biochemistry</i> 23:3443
C5.	Agrawal et al. (1987) "Oligodeoxynucleotide Methylphosphonates: Synthesis and Enzymic Degradation," <i>Tetrahedron Lett.</i> 28(31):3539-3542
C6.	Jager et al. (1988) Oligonucleotide N-Alkylphosphoramidates: Synthesis and Binding to Polynucleotides," <i>Biochemistry</i> 27:7237
C7.	Agrawal et al. (1988) "Oligodeoxynucleoside Phosphoramidates and Phosphorothioates As Inhibitors of Human Immunodeficiency Virus," <i>Proc. Natl. Acad. Sci. USA</i> 85:7079-7083
C8.	Zon et al. (1991) "Phosphorothioate Oligonucleotides" <i>Oligonucleotides and Analogues: A Practical Approach</i> pp. 87-108
C9.	Kuramoto et al. (1992) "Oligonucleotide Sequences Required For Natural Killer Cell Activation," <i>Jpn. J. Cancer Res.</i> 83:1128-1131
C10.	Crooke (1993) "An Overview of Progress In Antisense Therapeutics," 8 <i>Antisense & Nucl. Acid Drug Dev.</i> 115-122 CRC Press, Boca Raton, Florida
C11.	Zon (1993) "Protocols for Oligonucleotides and Analogs," <i>Methods In Molecular Biology</i> Vol. 20, pp. 165-189
C12.	Pisetsky et al. (1994) "Stimulation of Murine Lymphocyte Proliferation By A Phosphorothioate Oligonucleotide With Antisense Activity For Herpes Simplex Virus," 54 <i>Life Sci.</i> 101
C13.	Yamamoto et al. (1994) "Lipofection of Synthetic Oligodeoxyribonucleotide Having a Palindromic Sequence of AACGTT to Murine Spenocytes Enhances Interferon Production and Natural Killer Activity," 38 <i>Microbiol. Immunol.</i> 831
C14.	Agrawal et al. (1995) "Modified Oligonucleotides as Therapeutic and Diagnostic Agents," <i>Curr.Opin.Biotechnol.</i> 6:12-19
C15.	Krieg et al. (1995) "CpG Motifs In Bacterial DNA Trigger Direct B-Cell Activation," <i>Nature</i> 371:546-549
C16.	Klinman et al. (1996) "CpG Motifs Present in Bacterial DNA Rapidly Induce Lymphocytes to Secrete Interleukin 6, Interleukin 12, and Interferon γ ," 93 <i>Proc. Natl. Acad. Sci. USA</i> 2879
C17.	Liang et al. (1996) "Activation of Human B Cells By Phosphorothioate Oligodeoxynucleotides," <i>J. Clin. Invest.</i> 98:1119-1129
C18.	Zhao et al. (1996) "Effect of Different Chemically Modified Oligodeoxynucleotides on Immune Stimulation," <i>Biochem. Pharm.</i> 51:173-182
C19.	Chu et al. (1997) "CpG Oligodeoxynucleotides Act As Adjuvants That Switch On T Helper 1 (Th1) Immunity," 186 <i>J. Exp. Med.</i> 1623

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation is considered, whether or not citation is in conformance with MPEP § 609: Draw Line through citation if not conformance and not considered. Include copy with next communication to applicant.

INFORMATION DISCLOSURE IN AN APPLICATION

(Use several sheets if necessary)

Docket Number

HYB-005US3

Application Number

10/694,418

Applicant

Kandimalla

Filing Date

October 27, 2003

Group Art Unit

NA

Sheet

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OF

2

C20.	Dunford et al. (1997) "Antisense 97: Targeting the Molecular Basis of Disease" (<i>Nature Biotechnology</i>) Conference Abstract, pp. 40
C21.	Sparwasser et al. (1997) "Macrophages Sense Pathogens Via DNA Motifs: Induction of Tumor Necrosis Factor- α -Mediated Shock," 27 <i>Eur. J. Immunol.</i> 1671
C22.	Zhao et al. (1997) "Pattern and Kinetics of Cytokine Production Following Administration of Phosphorothioate Oligonucleotides in Mice," 7 <i>Antisense Nucleic Acid Drug. Dev.</i> 495
C23.	McCluskie et al. (1998) "Cutting Edge: CpG DNA Is A Potent Enhancer of Systemic and Mucosal Immune Responses Against Hepatitis B Surface Antigen with Intranasal Administration to Mice," <i>J. Immunol.</i> 161:4463-4466
C24.	Moldoveanu et al. (1998) "CpG DNA, A Novel Immune Enhancer for Systemic and Mucosal Immunization With Influenza Virus," <i>Vaccine</i> 16:1216-1224
C25.	Sparwasser et al. (1998) "Bacterial DNA and Immunostimulatory CpG Oligonucleotides Trigger Maturation and Activation of Murine Dendritic Cells," 28 <i>Eur. J. Immunol.</i> 2045
C26.	Tokunaga et al. (1999) "How BCG Led to the Discovery of Immunostimulatory DNA," 52 <i>Jap. J. Infect. Dis.</i> 1
C27.	Zhao et al. (1999) "Site of Chemical Modifications in CpG Containing Phosphorothioate Oligodeoxynucleotide Modulates Its Immunostimulatory Activity," <i>Bioorg. & Med. Chem. Lett.</i> 9:3453-3458
C28.	Agrawal et al. (2000) "Antisense Therapeutics: Is It As Simple As Complementary Base Recognition," 6 <i>Mol. Med. Today</i> 72
C29.	Zhao et al. (2000) "Immunostimulatory Activity of CpG Containing Phosphorothioate Oligodeoxynucleotide Is Modulated by Modification of a Single Deoxynucleoside," <i>Bioorg. & Med. Chem. Lett.</i> 10:1051-1054
C30	Agrawal et al., "Antisense therapeutics", <i>Curr. Opin.Chem. Biol.</i> , 2:519-528, 1998.
C31	Chaix et al., "3'-3' Linked Oligonucleotides: Synthesis and Stability Studies", <i>Bioorg. & Med.Chem.</i> , 6:827-832, 1996.
c32	Klinman, "therapeutic Applications of CpG-Containing Oligodeoxynucleotides", <i>Antisense & Nucl. Acid Drug Dev.</i> , 8:181-184, 1998.
C33	Yu et al., "Accessible 5'-End of CpG-Containing...", <i>Bioorganic & Medicinal Chemistry Lett.</i> , 10:2585-2588, 2000
C34	Kandimalla et al., "Effect of Chemical Modifications...", <i>Bioorganic & Medicinal Chemistry</i> , 9:807-813, 2001.
c35	International Search Report (PCT APP. No. PCT/US01/30137).

EXAMINER

DATE CONSIDERED

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